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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/497,993	02/04/2000	Bradley Paul Barber	2925-0401P	8152

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EXAMINER

TUGBANG, ANTHONY D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 12/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/497,993

Applicant(s)

BARBER ET AL.

Examiner

Dexter Tugbang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 6-9 and 17-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 10-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed on 10/23/02 (Paper No. 7) has been fully considered and made of record.

Election/Restrictions

2. Claims 6-9 and 17-28 continue to stand as being withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 4.
3. It is noted that in the reply filed 10/23/02, the applicant(s) have amended Claim 1 so that the combination of Group I contains all of the particulars of the subcombination of Group II. Therefore, the previous restriction requirement (Paper No. 6) has been withdrawn. Claims 1-5 and 10-16 will be examined on their merits.

Specification

4. The disclosure is objected to because of the following informalities: in the specification on page 7, line 20, the patent application serial number is not listed.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 11, the phrase of "said conductive films" (line 1) lacks positive antecedent basis.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 2 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braymen 5,348,617 in view of EerNisse et al 5,022,130.

Braymen discloses a method of producing and isolating an acoustic resonator device comprising: depositing a first metal film 27 on a substrate 26 (see Fig. 4a); depositing a piezoelectric material 28 on the first metal film 27 (in Fig. 4b); depositing a second metal film 29 on the piezoelectric material; patterning the second metal film (see col. 7, lines 18-21).

Regarding Claim 10, Braymen further teaches that the piezoelectric material is formed from AlN or ZnO (see col. 1, lines 36-37).

Regarding Claim 11, as best understood, Braymen further teaches that both the first and second metal films are formed by lithographic patterning of other conductors (see col. 6, lines 33-35 and col. 7, lines 18-21).

Regarding Claim 12, Braymen teaches that the substrate can be made from silicon (see col. 1, lines 29) and that all of layers 27-31 (in Fig. 4e) are read as acoustic reflecting layers.

Braymen does not teach isolating the piezoelectric material by selectively removing some of the piezoelectric material not involved in signal transmission to reduce an amount of acoustic energy which propagates in a lateral direction away from the device.

EerNisse teaches isolating the piezoelectric device by removing some amount of the piezoelectric material to change the shape of the piezoelectric material and reduce the acoustic energy or the error caused by vibration frequency and achieve a certain frequency control (see col. 1, line 55 to col. 2, line 5). The acoustic energy is vibration that propagates in a lateral direction away from the device.

Regarding Claim 2, EerNisse teaches that removing some of the piezoelectric material occurs during fabrication of the device (see col. 2, lines 7-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Braymen by including the step of isolating the piezoelectric material, as taught by EerNisse, to positively control the frequency of the device by reducing the frequency caused error.

9. Claims 3-5 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braymen in view of EerNisse, as applied to claim 1 above, and further in view of Ruby et al 5,873,153.

Braymen, as modified by EerNisse, teaches the claimed manufacturing method as relied upon above.

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Regarding Claims 5 and 14, EerNisse teaches selective etching to remove some of the piezoelectric material (see col. 7, lines 45-50).

The modified Braymen method discloses substantially all of the limitations of the claimed manufacturing method except isolating the piezoelectric material after device fabrication, as specifically required by Claims 3, 4 and 13.

Ruby suggests that the acoustic energy or vibration frequency can be isolated or adjusted after device fabrication to compensate or reduce frequency errors (see col. 3, lines 21-24).

Regarding Claims 15 and 16, Ruby suggests selectively etching the substrate 102 with a cavity 103 and backfilling voids formed in the piezoelectric material with a different material 302 (in Fig. 11), all of which is necessary to adjust the acoustic path of the device (see col. 5, lines 47+).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have improved the modified Braymen method by isolating the piezoelectric material after device fabrication, as taught by Ruby, to achieve the same art recognized results of reducing frequency errors. Additionally, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have improved the modified Braymen method by selectively etching the substrate and backfilling voids in the piezoelectric material with a different material, as taught by Ruby, to positively form an acoustic path in the resonator device and achieve a desired frequency.

Response to Arguments

10. Applicant's arguments with respect to Claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

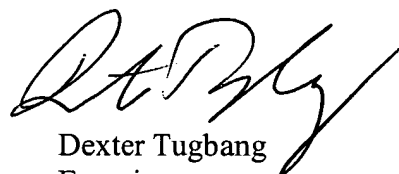
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dexter Tugbang whose telephone number is 703-308-7599. The examiner can normally be reached on Monday - Friday 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703-305-3590 for regular communications and 703-305-3588 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0858.

A handwritten signature in black ink, appearing to read 'D. Tugbang', is written over the printed name and title.

Dexter Tugbang
Examiner
Art Unit 3729

adt
December 27, 2002